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The Degree of Drought Tolerance is in the Roots

Lawns, shrubs, flowers and trees have endured some of the most stressful conditions in recent history. Latent stress symptoms will undoubtedly continue to show up during the next weeks or months even if normal rainfall patterns return.

It's time to reflect upon the drought and consider some things that we can do should we be faced with such a long, hot and dry period again. Some interesting research concerning soil moisture stress has been done by agronomists. Though horticulture deals with different kinds of plants, the information is certainly applicable.

The rooting depth is directly related to the number of days that a plant can go without showing signs of water stress. In studies with bahiagrass for example, when the root system was only 6 inches deep the plants showed water stress 3 days after optimum irrigation was applied. A root system with a 12-inch rooting depth went 6 days, and at a 24-inch depth, they went 12 days before showing drought stress.

Plots with various other rooting depths were checked up to a maximum of 49 inches, which could go 24 days before watering was required. The conclusion of this scientist was that plants with a shallow root depth are almost impossible to irrigate adequately.

There are several reasons that a lawn or shrub planting would have an extremely shallow root system. In the case of a lawn, the most frequent cause is extremely low mowing. There is a direct relationship between the cutting height and the depth of the roots.

Compacted soil is also a major cause of shallow root systems in all horticultural plantings. Most of the urban and rural soils along the Gulf Coast have a natural compaction layer at a depth of 6 to 12 inches below the surface. This compacted soil is almost impenetrable to most plant roots.

There are a few exceptions. The roots of bahiagrass and bermudagrass have the ability to break up even the hardest hardpan. Bahiagrass may be the best because

it also reduces plant parasitic nematodes if it is maintained for 2 to 3 years. These attributes are often taken advantage of by vegetable growers. Watermelon growers especially like to use fields that previously contained a lush stand of bahiagrass.

Obviously, breaking up this hardpan in landscapes and gardens is more complicated than it would be on a farm. Many of the plants that we use are permanent, or are left to grow for several years. There are however, some things that we can do.

Prior to planting a landscape bed or garden, break through the hardpan, either by hand or with a subsoiler. During the process, be careful not to mix the topsoil with the subsoil. Some gardeners use a technique called “double digging.” First, they remove the topsoil, dig and turn the subsoil while breaking through the hardpan and then replace the topsoil. This involves a lot of work, but the practice can pay off.

The use of mulches also reduces moisture stress. Soil temperatures and associated moisture loss vary greatly between mulched and unmulched areas. On July 20, at the research center in Marianna, Florida some soil temperatures were recorded that should be of interest to gardeners.

The air temperature when the readings were taken was 95 degrees F. Bare, crusted soil, similar to that in an unmulched shrub or flower bed, was 126 degrees F. Recently tilled soil was 142 degrees F, while soil under wheat straw mulch was 106 degrees. There was 15 percent more soil moisture in the mulched plots.

Research such as this helps to explain one the most frequent comments heard during the drought: “I am watering, but I can’t seem to keep up.”

Question of the Week: My pecan trees have many small holes in the trunk. There are rows of holes that seem to be in a straight line. Will this kill them?

Answer: Though there are several species of wood boring insects that are sometimes found infesting the trunk of a pecan tree, none of them make holes in a pattern. This is obviously the result of feeding by sapsuckers. These little woodpeckers are migratory, normally appearing during the winter. They make shallow holes in the trunk in an evenly spaced horizontal line. Ignore the condition. The holes are not as deep as they appear, and there is no practical control.